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ABSTRACT SUBMISSION FORM

TITLE: CORTICAL LOCALIZATION WITH MAGNETIC RESONANCE IMAGING COMPARED TO DIRECT STIMULATION MAPPING

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Abstract must be contained within the blue borders:

Functional magnetic resonance imaging (fMRI) is recently reported and quickly evolving imaging tool which is being used to probe areas of cerebral activation related to different tasks. The basis for the techniques is fast acquisition MRIs such as flash or echo-planar imaging. Published reports showed changes in signal intensity via subtraction technique with primary visual stimulation and motor activation. The hypothesis backing the technique is that when an area of brain is activated, blood flow to the area increases in an amount excessive for the increased metabolic needs of the activated brain. The concentration of deoxyhemoglobin then goes down in the area of activation. Functional magnetic resonance imaging subtracts between activated and inactivated states in the same region which produces the map for activation. The anatomical resolution is much better than previous blood flow techniques have been able to produce because it is directly derived from MRI data. The time of acquisition is also very short, which will hopefully allow the imaging of quite complex tasks.

This is a report of the application of this technology in three patients with brain tumors and ten patients with epilepsy in regions of function in an attempt to help plan their surgical treatment. All patients were then operated on awake with stimulation brain mapping in the same region to attempt to verify the accuracy of the fMRI technique.